



**ENGINEERING OPERATIONS COMMITTEE
MEETING MINUTES
APRIL 2, 1998, 9:00 A.M.
EXECUTIVE CONFERENCE ROOM**

Present: C. T. Maki J. D. Culp G. Etelmaki (P. F. Miller)
C. Roberts S. Bower T. Myers (J. D. O'Doherty)
T. E. Davies J. W. Reincke T. Fort
M. H. Frankhouse

Guest: D. L. Smiley B. Zimmerman G. Mayes
J. Barak Dr. G. Baladi (MSU)

OLD BUSINESS

1. **Approval of the Minutes of the March 12, 1998, Meeting - C. T. Maki**

Minutes of the March 12, 1998, meeting were approved as written.

2. **Raised Pavement Marker (RPM) Update - J. D. O'Doherty/B. Zimmerman**

More information on RPMs was presented by Brian Zimmerman including accident data for 1994-96, a summary of options and cost estimates for various program choices. After reviewing these data, further discussion was directed at proceeding with the development of an RPM usage policy and guidelines for implementation. A suggested RPM program was also reviewed.

ACTION: The Traffic and Safety Division will prepare the draft policy for RPMs and will draft the proposed 1998-99 RPM program. Both drafts will be circulated to EOC members and the regions for review and comment prior to the next EOC meeting. The final policy/guidelines and proposed program will be returned to the EOC for approval.

3. **Projects Developed Without Consideration of Intelligent Transportation System (ITS) Infrastructure - J. D. O'Doherty**

Tabled until the statewide plan for ITS is prepared.

NEW BUSINESS

1. **Research Report, *An Evaluation of the Michigan Urban Diamond Interchange With Respect to the Single Point Urban Interchange* - J. D. O'Doherty/T. Myers**

The research report compares current urban interchange geometrics and functions with the Single Point Urban Interchange (SPUI) design, a design not currently used by MDOT. The results showed that the SPUI operation is adversely affected with the addition of frontage roads. In most situations, the Michigan Urban Diamond Interchange is operationally superior to both the SPUI and the traditional diamond interchange.

ACTION: EOC accepts and approves the research report. The Traffic and Safety Division will distribute the report as necessary.

2. **Research Report, *Mechanistic Design Implementation Plan for Flexible Pavements and Overlays* - J. W. Reincke/D. L. Smiley**

The final report for this research project was reviewed and accepted by the Pavement Selection Review Committee after acceptance by the project's technical advisory group (TAG).

The project investigated the benefits and costs of changing MDOT's design method for flexible pavements and overlays to a mechanistic based methodology from the existing AASHTO design procedure.

The study concluded that the department should change its design procedure from AASHTO to a mechanistic procedure. The various design procedures should be consolidated into a comprehensive and unified process to optimize the life and performance of the pavement and to minimize life cycle costs.

The report's implementation plan has four parts:

- A. Continue education and training on mechanistic principles as they relate to structural design, mix design, construction quality, and pavement performance.
- B. Develop an overall process for material characterization that would include;
 - sensitivity and variability of paving materials and the subgrade
 - conduct "network" deflection measurements to assess the "seasonal variability" and "reliability" of design input values. It would include verification of as-constructed material properties.
- C. To optimize pavement performance requires a "total quality teamwork" effort on the part of the department, the construction industry, and academia.

- D. A utilization of pavement management principles that are dependent on the department's PMS and as-constructed "feedback". Existing programs (MICHPAVE and MICHBACK) be improved.

The report's implementation schedule recommends a change to mechanistic design be done gradually over the next ten years. The AASHTO procedure is currently being evaluated under a national research contract for conversion by 2002. At that time, the department will be capable of making an informed decision to either adopt the new AASHTO guide or implement its own version of mechanistic design. In the interim, the department needs to address the acknowledged deficiencies in material characterization and verification between design and as-constructed values to more accurately predict and substantiate service life estimates for flexible pavements and overlays.

The TAG has accepted the final report from the PI after several iterations. The TAG agrees with the report's implementation plan in principle and recommends that an evaluation period start immediately to assess the benefits of adopting mechanistic design. The evaluation period would last until the proposed 2002 date for the new AASHTO Guide. During the next four years, periodic discussions and review assessments should be made to judge our success to improve procedures. Progress updates will be provided to the PSRC for feedback.

DECISION: The department will continue to evaluate mechanistic design procedures (benefits) without implementing them. The evaluation period will begin immediately and last until the new AASHTO guide is available in 2002.

ACTION: EOC accepts and approves the final research report. The Construction and Technology Division will distribute the report as appropriate.

3. **Draft Bituminous Mixture Selection Guidelines - M. Frankhouse/G. Mayes**

A revised draft of the proposed guidelines (dated March 31, 1998) was handed out at the meeting.

Superpave projects are currently being designed with incomplete guidelines. The draft guidelines, which incorporate input from industry as well as the latest national guidelines and recommendations, will provide a comprehensive guide for designers. The document provides guidance for the following issues of concern:

- A. Minimum and maximum layer thickness.
- B. Asphalt binder selection.
- C. Mainline mix selection.
- D. Non-mainline mix selection (shoulders, ramps, etc.).
- E. Preventive maintenance mix selection.

ACTION: The proposed guidelines are accepted and approved for distribution.

4. **Research Report, *Polymers in Bituminous Mixtures, Phase II* - M. Frankhouse/J. Barak**

The research was initiated to determine the effect of adding polymers to bituminous mixtures. John Barak presented a summary of the research, which was conducted by MSU. The main objective was the assessment of whether or not polymer modified asphalt binders cause effective improvement in bituminous pavement performance. Based on extrapolation of laboratory results and cost considerations, improved pavement performance is expected when polymer modified asphalt binders are incorporated into the mixture.

ACTION: EOC accepted and approved the report including the Action Plan, which includes a recommendation to not proceed with Phase III. The report will be distributed as necessary.

(Signed Copy on File at C&T/Secondary)
Jon W. Reincke, Secretary
Engineering Operations Committee

JWR:kat

cc: EOC Members
Region Engineers

J. R. DeSana	R. J. Risser, Jr. (MCPA)	T. Adams (MCA)	B. Richter
R. J. Lippert, Jr.	A. C. Milo (MRBA)	J. Ruszkowski	R. D. Till
D. L. Smiley	J. Becsey (MAPA)	C. Libiran	M. Frierson
M. Nystrom (AUC)	G. L. Mitchell	G. J. Bukoski	C. W. Whiteside
M. Newman (MAA)	J. Steele (FHWA)	K. Rothwell	M. S. Watson